

| <u>DB Name</u> | <u>Query</u> | <u>Hit Count</u> | <u>Set Name</u> |
|---|---------------------------|------------------|----------------------------|
| USPT,PGPB,JPAB,EPAB,DWPI | l4 and l15 | 30 | <u>L16</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | disinfect\$ | 39634 | <u>L15</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l1 and l13 | 2 | <u>L14</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l10 same l3 | 30 | <u>L13</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l5 and l11 | 2 | <u>L12</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l3 and l10 | 222 | <u>L11</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | insecticid\$ | 60220 | <u>L10</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l8 not l2 | 0 | <u>L9</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l3 and l5 | 2 | <u>L8</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l3 and l6 | 0 | <u>L7</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l5 not l2 | 12 | <u>L6</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | "safer insecticidal soap" | 20 | <u>L5</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | l1 and l3 | 416 | <u>L4</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | pine oil | 2825 | <u>L3</u> |
| USPT,PGPB,JPAB,EPAB,DWPI | unsaponified | 525 | <u>L2</u> |
| USPT,PGPB,JPAB,EPAB,DWPI (fatty near5 salts) or "safer insecticidal soap" | | 40660 | <u>L1</u> |

WEST**Generate Collection****Search Results - Record(s) 1 through 2 of 2 returned.**☐ 1. Document ID: US 4341782 A

L14: Entry 1 of 2

File: USPT

Jul 27, 1982

US-PAT-NO: 4341782

DOCUMENT-IDENTIFIER: US 4341782 A

TITLE: Pyrimidine derivatives and agricultural uses

DATE-ISSUED: July 27, 1982

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Konishi; Kazuo | Takatsuki | N/A | N/A | JPX |
| Matsuura; Kazuho | Kyoto | N/A | N/A | JPX |

US-CL-CURRENT: 514/275; 544/253, 544/262, 544/292, 544/330, 544/332

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image |
|------|-------|----------|-------|--------|----------------|------|-----------|--------|------|-----------|-------|
|------|-------|----------|-------|--------|----------------|------|-----------|--------|------|-----------|-------|

☒ 2. Document ID: US 3666776 A

L14: Entry 2 of 2

File: USPT

May 30, 1972

US-PAT-NO: 3666776

DOCUMENT-IDENTIFIER: US 3666776 A

TITLE: DIOXABICYCLO OCTANE COMPOUNDS

DATE-ISSUED: May 30, 1972

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|---------|-------|----------|---------|
| Dachs; Norman W. | Buffalo | NY | N/A | N/A |

US-CL-CURRENT: 549/397; 514/937, 987/50

| Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWIC | Draw Desc | Image |
|------|-------|----------|-------|--------|----------------|------|-----------|--------|------|-----------|-------|
|------|-------|----------|-------|--------|----------------|------|-----------|--------|------|-----------|-------|

Generate Collection

| Terms | Documents |
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| 11 and 113 | 2 |

WEST**End of Result Set**

Generate Collection

L14: Entry 2 of 2

File: USPT

May 30, 1972

DOCUMENT-IDENTIFIER: US 3666776 A
TITLE: DIOXABICYCLO OCTANE COMPOUNDS

DEPR:

The compounds of this invention are made into pesticidal compositions for use against insects and mites by dilution with an insecticidal adjuvant as a carrier therefor, by dispersing in an organic solvent, or in water, or by diluting with a solid insecticidal adjuvant as a carrier. Dispersions containing a surface active dispersing agent have the advantage of spreading the toxic substance more effectively over the plant surface. Dispersions in organic solvents include dispersions in alcohols, pine oil, hydrocarbon solvents, difluorodichloromethane, and similar organic solvents. The compounds of this invention are also used in Aerosol formulations in which difluorodichloromethane, and similar organic solvents. The compounds of this invention are also used in Aerosol formulations in which difluorodichloromethane and similar aerosol propellants form the propellant vehicle.

DEPR:

These surface active agents can be used with known insecticides and include neutral soaps of resin, alginic and fatty acids and alkali metals or alkyl amines or ammonia, saponins, gelatins, milk, soluble casein, flour and soluble proteins thereof, sulfite lye, ligment pitch, sulfite liquor, long-chain fatty alcohols averaging from 12 to 18 carbon atoms and alkali metal salts of the sulfates thereof, salts of sulfated fatty acid, salts of sulphonic acids, esters of long-chain fatty acids and poly-hydric alcohols in which alcohol groups are free, clays such as fullers earth, China clay, kaolin, attapulgite, bentonite and related hydrated aluminum silicates having the property of forming a colloidal gel. All of these composition of toxic material and surface active dispersing agents may contain an addition synergists and/or adhesive or sticking agents.

WEST[Generate Collection](#)**Search Results - Record(s) 1 through 10 of 30 returned.**☐ 1. Document ID: US 6274540 B1

L16: Entry 1 of 30

File: USPT

Aug 14, 2001

US-PAT-NO: 6274540

DOCUMENT-IDENTIFIER: US 6274540 B1

TITLE: Detergent compositions containing mixtures of crystallinity-disrupted surfactants

DATE-ISSUED: August 14, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP | CODE | COUNTRY |
|---|------------|-------|-----|------|---------|
| Scheibel; Jeffrey John | Loveland | OH | N/A | | N/A |
| Cripe; Thomas Anthony | Loveland | OH | N/A | | N/A |
| Kott; Kevin Lee | Loveland | OH | N/A | | N/A |
| Connor; Daniel Stedman | Cincinnati | OH | N/A | | N/A |
| Burckett-St. Laurent; James Charles Theophile Roger | Cincinnati | OH | N/A | | N/A |
| Vinson; Phillip Kyle | Fairfield | OH | N/A | | N/A |

US-CL-CURRENT: [510/352](#); [510/357](#), [510/424](#), [510/426](#), [510/428](#)[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[K00C](#) | [Draw Desc](#) | [Image](#)☐ 2. Document ID: US 6218351 B1

L16: Entry 2 of 30

File: USPT

Apr 17, 2001

US-PAT-NO: 6218351
DOCUMENT-IDENTIFIER: US 6218351 B1

TITLE: Bleach compositions

DATE-ISSUED: April 17, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP | CODE | COUNTRY |
|--|------------|-------|-----|------|---------|
| Busch; Daryle Hadley | Lawrence | KS | N/A | | N/A |
| Collinson; Simon Robert | Fleetwood | N/A | N/A | | GBX |
| Hubin; Timothy Jay | Eudora | KS | N/A | | N/A |
| Perkins; Christopher Mark | Cincinnati | OH | N/A | | N/A |
| Labeque; Regine | Brussels | N/A | N/A | | BEX |
| Williams; Barbara Kay | Cincinnati | OH | N/A | | N/A |
| Johnston; James Pyott | Wemel | N/A | N/A | | BEX |
| Kitko; David Johnathan | Cincinnati | OH | N/A | | N/A |
| Burckett-St. Laurent; James Charles Theophile Roger | Cincinnati | OH | N/A | | N/A |

US-CL-CURRENT: 510/311; 510/376, 510/500

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 3. Document ID: US 6177388 B1

L16: Entry 3 of 30

File: USPT

Jan 23, 2001

US-PAT-NO: 6177388
DOCUMENT-IDENTIFIER: US 6177388 B1

TITLE: Botanical oils a blooming agents in hard surface cleaning compositions

DATE-ISSUED: January 23, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP | CODE | COUNTRY |
|---------------------------|--------------------|-------|-----|------|---------|
| Cheung; Tak Wai | Princeton Junction | NJ | N/A | | N/A |
| Smialowicz; Dennis Thomas | Waldwick | NJ | N/A | | N/A |

US-CL-CURRENT: 510/101; 134/42, 510/238, 510/239, 510/240, 510/384, 510/433,
510/434, 510/477, 510/503

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 4. Document ID: US 6159925 A

L16: Entry 4 of 30

File: USPT

Dec 12, 2000

US-PAT-NO: 6159925

DOCUMENT-IDENTIFIER: US 6159925 A

TITLE: Acidic liquid crystal compositions

DATE-ISSUED: December 12, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|-------|-------|----------|---------|
| Blandiaux; Genevieve | Trooz | N/A | N/A | BEX |

US-CL-CURRENT: 510/437; 510/199, 510/238, 510/395, 510/397, 510/405, 510/417,
510/426, 510/432, 510/435, 510/471, 510/475

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|
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| KWIC | Draw Desc | Image |
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☐ 5. Document ID: US 6140284 A

L16: Entry 5 of 30

File: USPT

Oct 31, 2000

US-PAT-NO: 6140284

DOCUMENT-IDENTIFIER: US 6140284 A

TITLE: Botanical oils as blooming agents in hard surface cleaning compositions

DATE-ISSUED: October 31, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------------|--------------------|-------|----------|---------|
| Cheung; Tak Wai | Princeton Junction | NJ | N/A | N/A |
| Smialowicz; Dennis Thomas | Waldwick | NJ | N/A | N/A |

US-CL-CURRENT: 510/101; 134/25.2, 134/42, 510/180, 510/181, 510/191, 510/199,
510/238, 510/239, 510/240, 510/243, 510/245, 510/362, 510/405, 510/417, 510/433,
510/499, 510/503, 510/535

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|
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| KWIC | Draw Desc | Image |
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☐ 6. Document ID: US 6117833 A

L16: Entry 6 of 30

File: USPT

Sep 12, 2000

US-PAT-NO: 6117833

DOCUMENT-IDENTIFIER: US 6117833 A

TITLE: Bleaching compositions and method for bleaching substrates directly with air

DATE-ISSUED: September 12, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------------|---------------|-------|----------|---------|
| Racherla; Uday Shanker | West Caldwell | NJ | N/A | N/A |
| Vermeer; Robert Charles | Nutley | NJ | N/A | N/A |

US-CL-CURRENT: 510/367; 510/302, 8/111

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☒ 7. Document ID: US 6103683 A

L16: Entry 7 of 30

File: USPT

Aug 15, 2000

US-PAT-NO: 6103683

DOCUMENT-IDENTIFIER: US 6103683 A

TITLE: Disinfecting compositions and processes for disinfecting surfaces

DATE-ISSUED: August 15, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-----------|-------|----------|---------|
| Romano; Nicoletta | Rome | N/A | N/A | ITX |
| Trani; Marina | Rome | N/A | N/A | ITX |
| Minervini; Giovanni | Rome | N/A | N/A | ITX |
| Brown; Marena Dessette | Fairfield | OH | N/A | N/A |

US-CL-CURRENT: 510/383; 510/101, 510/104, 510/131, 510/159, 510/295, 510/309,
510/319, 510/490, 510/504

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|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 8. Document ID: US 6100231 A

L16: Entry 8 of 30

File: USPT

Aug 8, 2000

US-PAT-NO: 6100231

DOCUMENT-IDENTIFIER: US 6100231 A

TITLE: Biphenyl based solvents in blooming type hard surface cleaners

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|--------------------|-------|----------|---------|
| Cheung; Tak Wai | Princeton Junction | NJ | N/A | N/A |
| Smialowicz; Dennis | Waldwick | NJ | N/A | N/A |

US-CL-CURRENT: 510/433; 510/438, 510/461, 510/503

| | | | | | | | |
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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 9. Document ID: US 6010993 A

L16: Entry 9 of 30

File: USPT

Jan 4, 2000

US-PAT-NO: 6010993
DOCUMENT-IDENTIFIER: US 6010993 A

TITLE: Disinfecting compositions

DATE-ISSUED: January 4, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------|-------|----------|---------|
| Romano; Nicoletta | Rome | N/A | N/A | ITX |
| Trani; Marina | Rome | N/A | N/A | ITX |
| Minervini; Giovanni | Rome | N/A | N/A | ITX |

US-CL-CURRENT: 510/309; 422/36, 510/293, 510/295, 510/303, 510/319, 510/341,
510/372, 510/375, 510/382, 510/383, 510/406 , 510/433, 510/463

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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| KWIC | Draw Desc | Image |
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☐ 10. Document ID: US 5958334 A

L16: Entry 10 of 30

File: USPT

Sep 28, 1999

US-PAT-NO: 5958334
DOCUMENT-IDENTIFIER: US 5958334 A

TITLE: Combination capable of forming an odor barrier and methods of use

DATE-ISSUED: September 28, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | |
|-------------------------|-----------------------------|-------|----------|---------|-----|
| Haddon; Bruce Alexander | Clareville, New South Wales | 2107 | N/A | N/A | AUX |

US-CL-CURRENT: 422/5; 422/122, 424/76.5, 424/76.6

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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| KWIC | Draw Desc | Image |
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| Terms | Documents |
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| 14 and 115 | 30 |

Display

10

Documents, starting with Document:

11

Display Format:

Change Format

WEST[Generate Collection](#)**Search Results - Record(s) 11 through 20 of 30 returned.**☐ 11. Document ID: US 5939374 A

L16: Entry 11 of 30

File: USPT

Aug 17, 1999

US-PAT-NO: 5939374

DOCUMENT-IDENTIFIER: US 5939374 A

TITLE: Blooming type, hard surface cleaning and/or disinfecting compositions

DATE-ISSUED: August 17, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------------|------------|-------|----------|---------|
| Richter; Alan Francis | Branchburg | NJ | N/A | N/A |
| Taraschi; Frederic Albert | Skillman | NJ | N/A | N/A |

US-CL-CURRENT: 510/384; 510/123, 510/124, 510/237, 510/238, 510/245, 510/259,
510/362, 510/363, 510/382, 510/391, 510/398, 510/478, 510/504

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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| KWIC | Draw Desc | Image |
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☐ 12. Document ID: US 5932615 A

L16: Entry 12 of 30

File: USPT

Aug 3, 1999

US-PAT-NO: 5932615

DOCUMENT-IDENTIFIER: US 5932615 A

TITLE: Disinfecting composition especially suitable for the treatment of livestock buildings

DATE-ISSUED: August 3, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|-------------|-------|----------|---------|
| Daoudal; Jose | 53000 Laval | N/A | N/A | FRX |
| Lucas; Frederic | 53000 Laval | N/A | N/A | FRX |

US-CL-CURRENT: 514/531

| | | | | | | | |
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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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| KWIC | Draw Desc | Image |
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☐ 13. Document ID: US 5736032 A

L16: Entry 13 of 30

File: USPT

Apr 7, 1998

US-PAT-NO: 5736032
DOCUMENT-IDENTIFIER: US 5736032 A

TITLE: Stabilization of biowastes

DATE-ISSUED: April 7, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|--------|-------|----------|---------|
| Cox; James P. | Lynden | WA | 98264 | N/A |
| Cox; Robert W. Duffy | Lynden | WA | 98264 | N/A |

US-CL-CURRENT: 424/76.5, 252/175, 252/180, 252/181, 424/618, 424/619, 424/646,
424/648, 424/76.21, 424/76.6, 424/76.8, 514/693, 514/699, 514/703, 514/705

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|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☒ 14. Document ID: US 5728672 A

L16: Entry 14 of 30

File: USPT

Mar 17, 1998

US-PAT-NO: 5728672
DOCUMENT-IDENTIFIER: US 5728672 A

TITLE: Pine oil hard surface cleaning compositions

DATE-ISSUED: March 17, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|------------|-------|----------|---------|
| Richter; Alan F. | Branchburg | NJ | N/A | N/A |

US-CL-CURRENT: 510/463, 510/384, 510/423, 510/504

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 15. Document ID: US 5591708 A

L16: Entry 15 of 30

File: USPT

Jan 7, 1997

US-PAT-NO: 5591708
DOCUMENT-IDENTIFIER: US 5591708 A

TITLE: Pine oil hard surface cleaning compositions

DATE-ISSUED: January 7, 1997

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|------------|-------|----------|---------|
| Richter; Alan F. | Branchburg | NJ | N/A | N/A |

US-CL-CURRENT: 510/463, 510/384, 510/423, 510/504

| | | | | | | | |
|------|-------|----------|-------|--------|----------------|------|-----------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|

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| KWIC | Draw Desc | Image |
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☐ 16. Document ID: US 5589164 A

L16: Entry 16 of 30

File: USPT

Dec 31, 1996

US-PAT-NO: 5589164

DOCUMENT-IDENTIFIER: US 5589164 A

TITLE: Stabilization of biowastes

DATE-ISSUED: December 31, 1996

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|--------|-------|----------|---------|
| Cox; James P. | Lynden | WA | 98264 | N/A |
| Duffy Cox; Robert W. | Lynden | WA | 98264 | N/A |

US-CL-CURRENT: 424/76.5; 252/175, 252/180, 252/181, 424/682, 424/688, 424/76.6, 424/76.8, 514/690, 514/693, 514/699

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|
|------|-------|----------|-------|--------|----------------|------|-----------|

| KWIC | Draw Desc | Image |
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☐ 17. Document ID: US 5587157 A

L16: Entry 17 of 30

File: USPT

Dec 24, 1996

US-PAT-NO: 5587157

DOCUMENT-IDENTIFIER: US 5587157 A

TITLE: Stabilization of biowastes

DATE-ISSUED: December 24, 1996

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|--------|-------|----------|---------|
| Cox; James P. | Lynden | WA | 98264 | N/A |
| Duffy Cox; Robert W. | Lynden | WA | 98264 | N/A |

US-CL-CURRENT: 424/76.5; 252/175, 252/180, 252/181, 424/616, 424/618, 424/630, 424/632, 424/637, 424/639, 424/641, 424/688, 424/690, 424/76.6, 424/76.8, 514/693, 514/699, 514/703, 514/705

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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| KWIC | Draw Desc | Image |
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☐ 18. Document ID: US 5562780 A

L16: Entry 18 of 30

File: USPT

Oct 8, 1996

US-PAT-NO: 5562780

DOCUMENT-IDENTIFIER: US 5562780 A

TITLE: Method for dispensing compositions in an aqueous system

DATE-ISSUED: October 8, 1996

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|------------|-------|----------|---------|
| Bunczk; Charles J. | Norristown | PA | N/A | N/A |
| Burke; Peter A. | Downington | PA | N/A | N/A |

US-CL-CURRENT: 134/22.16; 134/22.19, 134/34, 134/42

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|
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| KWIC | Draw Desc | Image |
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☐ 19. Document ID: US 5352444 A

L16: Entry 19 of 30

File: USPT

Oct 4, 1994

US-PAT-NO: 5352444

DOCUMENT-IDENTIFIER: US 5352444 A

TITLE: Stabilization of biowastes

DATE-ISSUED: October 4, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|--------|-------|----------|---------|
| Cox; James P. | Lynden | WA | 98264 | N/A |
| Cox; R. W. Duffy | Lynden | WA | 98264 | N/A |

US-CL-CURRENT: 424/76.5; 424/617, 424/630, 424/637, 424/641, 424/646, 424/682,
424/690, 424/76.6, 424/76.8, 514/492, 514/494, 514/499, 514/500, 514/502, 514/693,
514/699, 514/703, 514/705

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
|------|-------|----------|-------|--------|----------------|------|-----------|
|------|-------|----------|-------|--------|----------------|------|-----------|

| KWIC | Draw Desc | Image |
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☐ 20. Document ID: US 5344811 A

L16: Entry 20 of 30

File: USPT

Sep 6, 1994

US-PAT-NO: 5344811

DOCUMENT-IDENTIFIER: US 5344811 A

TITLE: Method for dispensing compositions in an aqueous system

DATE-ISSUED: September 6, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|-------------|-------|----------|---------|
| Bunczk; Charles J. | Norristown | PA | N/A | N/A |
| Burke; Peter A. | Downingtown | PA | N/A | N/A |

US-CL-CURRENT: 504/362; 504/250, 504/354

WEST[Generate Collection](#)**Search Results - Record(s) 21 through 30 of 30 returned.**☐ **21. Document ID: US 5236614 A**

L16: Entry 21 of 30

File: USPT

Aug 17, 1993

US-PAT-NO: 5236614

DOCUMENT-IDENTIFIER: US 5236614 A

TITLE: Stable microemulsion disinfecting detergent composition

DATE-ISSUED: August 17, 1993

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|----------------------|---------------|-------|----------|---------|
| Jacquet; Fabienne M. | Paris | N/A | N/A | FRX |
| DeBrucq; Marie D. | Paris | N/A | N/A | FRX |
| Loth; Myriam M. | Saint-Nicolas | N/A | N/A | BEX |
| Blanvalet; Claude A. | Angleur | N/A | N/A | BEX |

US-CL-CURRENT: 510/214; 252/186.36, 252/187.26, 423/473, 510/101, 510/108,
510/242, 510/370, 510/372, 510/383, 510/417

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ **22. Document ID: US 5049299 A**

L16: Entry 22 of 30

File: USPT

Sep 17, 1991

US-PAT-NO: 5049299

DOCUMENT-IDENTIFIER: US 5049299 A

TITLE: Liquid lavatory cleansing and sanitizing composition

DATE-ISSUED: September 17, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|-------------|-------|----------|---------|
| Bunczk; Charles J. | Norristown | PA | N/A | N/A |
| Burke; Peter A. | Downingtown | PA | N/A | N/A |

US-CL-CURRENT: 510/192; 424/672, 510/193, 510/383, 510/500, 510/506

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ **23. Document ID: US 5034222 A**

L16: Entry 23 of 30

File: USPT

Jul 23, 1991

US-PAT-NO: 5034222

DOCUMENT-IDENTIFIER: US 5034222 A

TITLE: Composite gel-foam air freshener

DATE-ISSUED: July 23, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|----------|-------|----------|---------|
| Kellett; George W. | Cranford | NJ | N/A | N/A |
| Smith; James A. | Chatham | MA | N/A | N/A |
| Johanning; Bonnie | Clifton | NJ | N/A | N/A |

US-CL-CURRENT: 424/76.4, 239/55, 424/76.3, 514/944, 514/945, 516/106, 516/107,
516/109, 521/53, 521/55, 523/102

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 24. Document ID: US 4738728 A

L16: Entry 24 of 30

File: USPT

Apr 19, 1988

US-PAT-NO: 4738728

DOCUMENT-IDENTIFIER: US 4738728 A

TITLE: Lavatory cleansing blocks containing polyvalent metal salts to control
in-use block life

DATE-ISSUED: April 19, 1988

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|------------------|-------|----------|---------|
| Barford; Eric D. | Stanton | N/A | N/A | GB2 |
| Clark; Peter J. | Bury St. Edmunds | N/A | N/A | GB2 |

US-CL-CURRENT: 134/34, 134/42, 239/34, 4/227.1, 510/192, 510/193

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| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 25. Document ID: US 4269723 A

L16: Entry 25 of 30

File: USPT

May 26, 1981

US-PAT-NO: 4269723

DOCUMENT-IDENTIFIER: US 4269723 A

TITLE: Process for making a lavatory cleansing block and use

DATE-ISSUED: May 26, 1981

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|--------------|-------|----------|---------|
| Barford; Eric D. | Thetford | N/A | N/A | GB2 |
| Gray; Robin A. | Attleborough | N/A | N/A | GB2 |
| Saul; Michael R. | Hockwold | N/A | N/A | GB2 |

US-CL-CURRENT: 510/192; 510/101, 510/193, 510/391, 510/439

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 26. Document ID: US 4058628 A

L16: Entry 26 of 30

File: USPT

Nov 15, 1977

US-PAT-NO: 4058628

DOCUMENT-IDENTIFIER: US 4058628 A

TITLE: Disinfectant composition comprising pinanol

DATE-ISSUED: November 15, 1977

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|--------------|-------|----------|---------|
| Mitch; Frank A. | Jacksonville | FL | N/A | N/A |

US-CL-CURRENT: 514/729; 514/784

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 27. Document ID: US 3976587 A

L16: Entry 27 of 30

File: USPT

Aug 24, 1976

US-PAT-NO: 3976587

DOCUMENT-IDENTIFIER: US 3976587 A

TITLE: Amino derivatives of tetrasubstituted benzene compounds

DATE-ISSUED: August 24, 1976

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|-------------|-------|----------|---------|
| Merianos; John J. | Jersey City | NJ | N/A | N/A |
| Adams; Phillip | Murray Hill | NJ | N/A | N/A |

US-CL-CURRENT: 510/382; 134/42, 510/383, 510/499, 514/653, 564/368

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 28. Document ID: US 3968246 A

L16: Entry 28 of 30

File: USPT

Jul 6, 1976

US-PAT-NO: 3968246

DOCUMENT-IDENTIFIER: US 3968246 A

TITLE: Disinfecting with N-trimethylbenzyl ethylenediamine

DATE-ISSUED: July 6, 1976

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|-------------|-------|----------|---------|
| Merianos; John J. | Jersey City | NJ | N/A | N/A |
| Adams; Phillip | Murray Hill | NJ | N/A | N/A |

US-CL-CURRENT: 514/655, 162/161, 504/158, 510/214, 510/384, 510/391, 510/504

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 29. Document ID: US 3956197 A

L16: Entry 29 of 30

File: USPT

May 11, 1976

US-PAT-NO: 3956197

DOCUMENT-IDENTIFIER: US 3956197 A

TITLE: Cleaning composition in dry powder form

DATE-ISSUED: May 11, 1976

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Schoenholz; Daniel | Basking Ridge | NJ | N/A | N/A |
| Petersen; Arthur | Florham Park | NJ | N/A | N/A |
| Terry; Herbert | Wilton | CT | N/A | N/A |

US-CL-CURRENT: 510/438, 510/197, 510/237, 510/365, 510/467, 510/494, 510/500, 510/501, 510/505, 516/76

| Full | Title | Citation | Front | Review | Classification | Date | Reference |
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☐ 30. Document ID: EP 35703 A, AT 8001309 A, DE 3160994 G, EP 35703 B

L16: Entry 30 of 30

File: DWPI

Sep 16, 1981

DERWENT-ACC-NO: 1981-70127D
DERWENT-WEEK: 198139
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TITLE: Terpeneol prodn. by direct hydration of pinene - with aq. phosphoric acid
in presence of emulsifier, useful as perfume (AT 15.6.81)

INVENTOR: CHARWATH, M

PRIORITY-DATA: 1980AT-0001309 (March 10, 1980)

PATENT-FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
|--------------|--------------------|----------|-------|----------|
| EP 35703 A | September 16, 1981 | G | 020 | N/A |
| AT 8001309 A | June 15, 1981 | N/A | 000 | N/A |
| DE 3160994 G | November 3, 1983 | N/A | 000 | N/A |
| EP 35703 B | September 28, 1983 | G | 000 | N/A |

INT-CL (IPC): B01F 17/42; B01J 27/16; C07C 29/00; C07C 33/20

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|------|-------|----------|-------|--------|----------------|------|-----------|-----|-----------|-------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | KMC | Draw Desc | Image |
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L16: Entry 7 of 30

File: USPT

Aug 15, 2000

DOCUMENT-IDENTIFIER: US 6103683 A

TITLE: Disinfecting compositions and processes for disinfecting surfaces

ABPR:

The present invention relates to the disinfection of surfaces with a disinfecting composition comprising from 0.1% to 15% by weight of the total composition of hydrogen peroxide, and an antimicrobial essential oil or mixtures thereof.

BSPR:

The present invention relates to antimicrobial compositions which can be used to disinfect and clean various surfaces including animate surfaces (e.g., human skin, mouth and the like) and inanimate surfaces including, but not limited to, hard surfaces like walls, tiles, table tops, glass, bathroom surfaces, kitchen surfaces, dishes as well as fabrics, clothes, carpets and the like.

BSPR:

Antimicrobial/antibacterial compositions include materials which have the ability to disinfect. It is generally recognised that a disinfecting material greatly reduces or even eliminates the microorganisms, e.g., bacteria, existing on a surface. For example compositions based on halogen containing compounds like hypochlorite, or on quaternary compounds, have been extensively described in the art for disinfecting purpose. Compositions comprising a peracid are also known as disinfecting compositions.

BSPR:

However, a drawback associated to such disinfecting compositions based on

BSPR:

peracids is that they may damage surfaces onto which they are contacted to perform their disinfecting action. Indeed such disinfecting compositions based on peracids are perceived by the consumers as being not safe to various surfaces including hard-surfaces and fabrics, especially delicate fabrics like silk, wool and the like.

BSPR:

It is therefore an object of the present invention to provide disinfecting compositions that deliver improved safety to the surfaces treated therewith while not compromising on the disinfection performance delivered onto said surfaces even when used upon high diluted conditions.

BSPR:

It has now been found that the above object can be achieved by providing a composition comprising from 0.1% to 15% by weight of the total composition of hydrogen peroxide and an antimicrobial essential oil, or mixtures thereof. More particularly, it has been found that the compositions of the present invention comprising hydrogen peroxide and said antimicrobial essential oil, deliver improved safety to the surface treated therewith, while providing also excellent disinfection on clean surfaces, i.e. surfaces being free of any organic and/or inorganic soils, even at high dilution levels, i.e. up to dilution levels of from 1:100 (composition:water).

BSPR:

Accordingly, the compositions according to the present invention are suitable for disinfecting all types of surfaces including animate surfaces (e.g., human skin and/or mouth when used as an oral preparation or toothpaste) and inanimate surfaces. Indeed, this technology is particularly suitable in hard-surfaces

applications as well as in laundry applications, e.g., as a laundry detergent or laundry additive in a so called "soaking mode", "through the wash mode", or even as a laundry pretreater in a "pretreatment mode". More particularly, the compositions according to the present invention are suitable to be used on delicate surfaces including those surfaces in contact with food and/or babies in a safe manner. Indeed, when using the compositions according to the present invention in diluted conditions, the amount of chemical residues left onto a surface disinfected therewith is reduced. Thus, it may be not necessary to rinse for example a hard-surface after the compositions of the present invention have been applied thereto in diluted conditions.

BSPR:

An advantage of the present invention is that excellent disinfection is provided on a broad range of bacterial pure strains including Gram positive and Gram negative bacterial strains and more resistant micro-organisms like fungi.

BSPR:

Another advantage of the compositions of the present invention is that beside the disinfection properties delivered, good cleaning is also provided, especially in the embodiment of the present invention where the compositions herein further comprise a surfactant and/or a solvent.

BSPR:

Representative of the prior art is for example WO88/00795 which discloses liquid disinfecting compositions comprising a compound selected from the group of organic acids, perborates, peracids and their salts, together with a quaternary ammonium salt and an essential oil. No hydrogen peroxide is disclosed in the disinfecting compositions therein, let alone levels thereof.

BSPR:

EP-B-288 689 discloses a liquid for hard-surfaces comprising antimicrobial effective amounts of pine oil and at least one oil soluble organic acid. No hydrogen peroxide is disclosed.

BSPR:

U.S. Pat. No. 5,403,587 discloses aqueous antimicrobial compositions which can be used to sanitise, disinfect, and clean hard-surfaces. More particularly, U.S. Pat. No. 5,403,587 discloses aqueous compositions (pH 1 to 12) comprising essential oils (0.02% to 5%), which exhibit antimicrobial properties efficacy such as thyme oil, eucalyptus oil, clove oil and the like, and a solubilizing or dispersing agent sufficient to form an aqueous solution or dispersion of said essential oils in a water carrier. No hydrogen peroxide is disclosed.

BSPR:

The present invention encompasses a disinfecting composition comprising from 0.1% to 15% by weight of the total composition of hydrogen peroxide and an antimicrobial essential oil, or mixtures thereof.

BSPR:

The present invention further encompasses a process for disinfecting a surface wherein a disinfecting composition according to the present invention, is applied onto said surface.

BSPR:

The disinfecting compositions according to the present invention comprise from 0.1% to 15% by weight of the total composition of hydrogen peroxide, and an antimicrobial essential oil.

BSPR:

It is believed that the presence of hydrogen peroxide, in the compositions of the present invention contribute to the disinfection properties of said compositions. Indeed, hydrogen peroxide may attack the vital function of the microorganism cells, for example, it may inhibit the assembling of ribosomes units within the cytoplasm of the microorganism cells. Also hydrogen peroxide is a strong oxidizer that generates hydroxyl free radicals which attack proteins and nucleic acids. Furthermore, the presence of hydrogen peroxide provides strong stain removal benefits which are particularly noticeable for example in laundry and hard surfaces applications.

BSPR:

Suitable antimicrobial essential oils to be used in the compositions herein are those essential oils which exhibit antimicrobial activity. It is speculated that said antimicrobial essential oils act as proteins denaturing agents. Said antimicrobial oils contribute to the safety profile of the compositions of the present invention when used to disinfect any surface. A further advantage of said antimicrobial essential oils is that they impart pleasant odor to the disinfecting compositions of the present invention without the need of adding a perfume. Indeed, the disinfecting compositions according to the present invention deliver not only excellent disinfecting properties on clean surfaces to be disinfected but also good scent while being safe to the surfaces.

BSPR:

It has now been found that the compositions of the present invention comprising from 0.1% to 15% by weight of hydrogen peroxide and said antimicrobial essential oil or mixtures thereof deliver improved safety on surfaces, e.g., on hard-surfaces and on fabrics like silk, wool and the like, while delivering excellent disinfection performance on clean surfaces even when used under highly diluted conditions as compared to the same composition with a peracid instead of said hydrogen peroxide.

BSPR:

An advantage associated to the present invention is that when using said compositions to disinfect colored fabrics, the color damage is also reduced while delivering excellent disinfection performance on said fabrics, even when used under highly diluted conditions. Indeed, the color change and/or decoloration observed when treating colored fabrics with a composition according to the present invention comprising hydrogen peroxide and said antimicrobial essential oil or mixtures thereof, is reduced, while delivering excellent disinfection performance on said fabrics even when used under highly diluted conditions, as compared to the color change and/or decoloration observed when using the same composition but with a peracid instead of said hydrogen peroxide.

BSPR:

Excellent disinfection is obtained with the compositions of the present inventions on a variety of microorganisms including Gram positive bacteria like *Staphylococcus aureus*, and Gram negative bacteria like *Pseudomonas aeruginosa* as well as on fungi like *Candida albicans* present on clean surfaces, i.e., any surface being substantially free of organic and/or inorganic soils, even if used in highly diluted conditions.

BSPR:

Disinfection properties of a composition may be measured by the bactericidal activity of said composition. A test method suitable to evaluate the bactericidal activity of a composition on clean surfaces is described in European Standard, prEN 1040, CEN/TC 216 N 78, dated November 1995 issued by the European committee for standardisation, Brussels. European Standard, prEN 1040, CEN/TC 216 N 78, specifies a test method and requirements for the minimum bactericidal activity of a disinfecting composition. The test is passed if the bactericidal colonies forming units (cfu) are reduced from a 10.sup.7 cfu (initial level) to a 10.sup.2 cfu (final level after contact with the disinfecting product), i.e. a 10.sup.5 reduction of the viability is necessary. The compositions according to the present invention pass this test under clean conditions, even if used in highly diluted conditions.

BSPR:

Accordingly, the compositions of the present invention may preferably comprise an amphoteric surfactant, or mixtures thereof. Suitable amphoteric surfactants to be used herein include betaine and sulphobetaine surfactants, derivatives thereof or mixtures thereof. Said betaine or sulphobetaine surfactants are preferred herein as they contribute to the disinfecting properties of the compositions herein. Indeed, they help disinfection by increasing the permeability of the bacterial cell wall, thus allowing other active ingredients to enter the cell.

BSPR:

Other suitable amphoteric surfactants to be used herein include amine oxides or mixtures thereof. Amine oxides are preferred herein as they contribute to the disinfecting properties of the compositions herein. Indeed, they help disinfection by disrupting the cell wall/membrane of the bacteria, thus allowing

other antimicrobial ingredients to enter the cell and for example attack the inner part of the cell.

BSPR:

In a preferred embodiment of the present invention where the compositions herein are particularly suitable for the disinfection of a hard-surface, the surfactant is typically a surfactant system comprising an amine oxide and a betaine or sulphobetaine surfactant, preferably in a weight ratio of amine oxide to betaine or sulphobetaine of 2:1 to 100:1, more preferably of 6:1 to 100:1 and most preferably 10:1 to 50:1. The use of such a surfactant system in the compositions herein suitable for disinfecting a

BSPR:

Preferred anionic surfactants for use in the compositions herein are the C8-C16 alkyl sulfonates, C8-C16 alkyl sulfates, C8-C16 alkyl alkoxyated sulfates (e.g., C8-C16 alkyl ethoxyated sulfates), and mixtures thereof. Such anionic surfactants are preferred herein as it has been found that they contribute to the disinfecting properties of a disinfecting compositions comprising hydrogen peroxide and/or an antimicrobial essential oil. For example, C8-C16 alkyl sulfate acts by disorganizing the bacteria cell membrane, inhibiting enzymatic activities, interrupting the cellular transport and/or denaturing cellular proteins. Indeed, it is speculated that the improved disinfecting performance associated with the addition of an anionic surfactant, especially a C8-C16 alkyl sulfonate, a C8-C16 alkyl sulfate and/or a C8-C16 alkyl alkoxyated sulfate, in for example a composition of the present invention, is likely due to multiple mode of attack of said surfactant against the bacteria. Thus, another aspect of the present invention is the use of an anionic surfactant, especially a C8-C16 alkyl sulfonate, a C8-C16 alkyl sulfate and/or a C8-C16 alkyl alkoxyated sulfate, in a disinfecting composition comprising a hydrogen peroxide and/or an antimicrobial essential oil, to improve the disinfecting properties of said composition on gram negative and/or gram positive bacteria.

BSPR:

Other suitable surfactants also include C6-C20 conventional soaps (alkali metal salt of a C6-C20 fatty acid, preferably sodium salts).

BSPR:

Said chelating agents, especially phosphonate chelating agents like diethylene triamine penta methylene phosphonates, are particularly preferred in the compositions according to the present invention as they have been found to further contribute to the disinfecting properties of hydrogen peroxide. Thus, another aspect of the present invention is the use of a chelating agent, especially a phosphonate chelating agent like diethylene triamine penta methylene phosphonate, in a disinfecting composition comprising hydrogen peroxide, to improve the disinfecting properties of said composition on gram negative and/or gram positive bacteria.

BSPR:

containers, which are usually made of synthetic organic polymeric plastic materials. Accordingly, the present invention also encompasses liquid disinfecting compositions comprising hydrogen peroxide and an antimicrobial essential oil packaged in a spray dispenser, preferably in a trigger spray dispenser or pump spray dispenser.

BSPR:

Indeed, said spray-type dispensers allow to uniformly apply to a relatively large area of a surface to be disinfected the liquid disinfecting compositions suitable to be used according to the present invention, thereby contributing to disinfection properties of said compositions. Such spray-type dispensers are particularly suitable to disinfect vertical surfaces.

BSPR:

The compositions of the present invention may also be executed in the form of wipes. By "wipes" it is meant herein disposable towels impregnated with a liquid composition according to the present invention. Accordingly, the present invention also encompasses wipes, e.g. disposable paper towels, impregnated with a liquid composition according to the present invention. In the preferred execution said wipes are wetted with said liquid compositions. Preferably said wipes are packaged in a plastic box. The advantage of this execution is a faster

usage of a disinfecting composition by the user, this even outside the house, i.e. there is no need to pour the liquid compositions according to the present invention on the surfaces to be treated/disinfect and to dry it out with a cloth. In other words, wipes allow disinfection of surfaces in one step.

BSPR:

The present invention encompasses a process for disinfecting surfaces wherein a composition according to the present invention is applied onto said surfaces.

BSPR:

In the process of disinfecting surfaces according to the present invention said compositions may be applied to the surface to be disinfected in its neat form or in its diluted form.

BSPR:

By "diluted form" it is meant herein that the compositions to be used in the disinfection process herein being either in a liquid or solid form may be diluted by the user typically up to 100 times their weight of water, preferably into 80 to 30 times their weight of water, and more preferably 60 to 40 times.

BSPR:

In the preferred embodiment of the process of the present invention wherein said composition is applied to a hard-surface to be disinfected in its diluted form, it is not necessary to rinse the surface after the composition has been applied, indeed no visible residues are left onto the surface.

BSPL:

The disinfecting compositions:

BSPL:

The Process of disinfecting:

DEPR:

The following compositions were made by mixing the listed ingredients in the listed proportions (weight % unless otherwise specified). These compositions passed the prEN 1040 test of the European committee of standardisation. These compositions provide excellent disinfection when used neat or diluted, e.g. at 1:100, 1:25, 1:50 dilution levels, on clean surfaces while delivering also excellent surface safety and skin mildness.

CLPR:

1. A disinfecting composition comprising

CLPR:

6. A wipe impregnated with a disinfecting composition according to claim 5.

CLPR:

7. A disinfecting composition according to claim 5, packaged in a spray dispenser.

CLPR:

8. A method for disinfection of gram negative and/or gram positive bacteria in the mouth by contacting the oral surface using the composition according to claim 3.

CLPR:

10. A composition according to claim 9 wherein said antimicrobial essential oil is selected from the group consisting of thyme oil, lemongrass oil, citrus oil, lemon oil, orange oil, anise oil, clove oil, aniseed oil, cinnamon oil, geranium oil, rose oil, lavender oil, citronella oil, eucalyptus oil, peppermint oil, mint oil, camphor oil, sandalwood oil, cedar oil, rosmarin oil, pine oil, vervain oil, fleagrass oil, ratanhia oil and mixtures thereof.

CLPR:

12. A composition according to claim 11 for disinfecting the mouth wherein said antimicrobial essential oil is selected from the group consisting of thyme oil, clove oil, geranium oil, rose oil, eucalyptus oil, and mixtures thereof.

CLPR:

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L16: Entry 14 of 30

File: USPT

Mar 17, 1998

DOCUMENT-IDENTIFIER: US 5728672 A

TITLE: Pine oil hard surface cleaning compositions

ABPL:

A pine oil cleaning concentrate composition comprising as essential constituents: pine oil, a nonionic surfactant with a cloud point of 20.degree. C. or less, a solubilizing agent and, water, feature reduced levels of volatile organic contents, including reduced amounts of pine oil, yet provides good blooming characteristics upon mixing of the concentrate composition with a further amount of water to produce a cleaning composition therefrom. The pine oil cleaning compositions may further include conventional additives, including germicidal agents, viscosity modification agents, fragrances (natural or synthetically produced), foaming agents, further surfactants, and coloring agents.

BSPR:

Cleaning compositions are commercially important products and enjoy a wide field of utility in assisting in the removal of dirt and grime from surfaces, especially those characterized as useful with "hard surfaces". One particular category of cleaning compositions are those which are classed as pine oil type cleaning compositions which typically include one or more of the following identifying characteristics: containing an amount of one or more resins or oils derived from coniferous species of trees; containing synthetic fragrance compositions which are intended to mimic the scent of one or more resins or oils derived from coniferous species of trees; a color ranging from colorless to a deep amber, deep amber yellow or deep amber reddish color; generation of a milky or cloudy appearance when diluted with water in dilutions useful for cleaning applications.

BSPR:

While such pine oil type cleaning compositions are commercially significant and in popular use, their use is not without attendant shortcomings. For example, high levels of pine oil in a cleaning composition are known to leave undesirable surface residues, particularly on hard surfaces, where the pine oil form a constituent in a cleaning composition. This effect may be minimized by the addition of further constituents, such as the use of certain surfactants which are useful in solubilizing and stabilizing the the pine oil. However, such a solution raises further problems as many useful surfactants, and frequently the pine oil itself, are categorized as undesired volatile organic compounds ("VOC"). Thus, there is need in the art for providing improved pine oil type cleaning compositions which exhibit one or more of the identifying characteristics outlined above which are important indicia for consumer acceptance, while at the same time providing a reduction in the content of undesired volatile organic compounds which are often used in commercially available pine oil type cleaning compositions. Various formulations directed to the production of pine oil type cleaners with reduced pine oil content have been proposed. For example, CA 1153267 teaches a pine oil type cleaning composition which includes 0 to 8% by weight pine oil, but which also requires that a minimum of 5.6% by weight alpha terpineol be present. Further, CA 1120820 describes disinfecting pine oil type cleaning composition which includes among other essential constituents, from 5 to 30 % by weight of pine oil. While advantageous, these compositions as well as other art known compositions and formulations are not without attendant shortcomings, certain shortcomings which the present applicant addresses.

BSPR:

It is therefore among the objects of the invention to provide a cleaning compositions and concentrates thereof which exhibit one or more of the

identifying characteristics of pine oil type cleaning compositions described above, particularly those which exhibit reduced amounts of volatile organic compounds ("VOCs").

BSPR:

It is further object of the invention to provide commercially acceptable shelf stable Concentrated cleaning compositions which exhibit one or more of the identifying characteristics of pine oil type cleaning compositions described above, particularly those which exhibit reduced amounts of VOCs, which concentrated cleaning compositions are readily dilutable with water to form useful cleaning compositions. Such cleaning compositions are especially useful for cleaning hard surfaces.

BSPR:

A still further object of the invention is the provision of cleaning compositions and concentrates which exhibit one or more of the identifying characteristics of pine oil type cleaning compositions described above, particularly those which exhibit reduced amounts of volatile organic compounds, which composition further include one or more constituents which impart disinfectant properties to the cleaning compositions.

BSPR:

A yet further object of the invention is the provision of pourable concentrated cleaning compositions exhibiting one or more of the identifying characteristics of pine oil type cleaning compositions described above which are readily dilutable in water.

BSPR:

A still further object of the invention is to provide a process for cleaning and disinfecting a hard surface requiring such treatment which process includes the step of applying a cleaning composition in amounts effective for providing such cleaning and disinfecting effects.

DEPR:

A) pine oil;

DEPR:

Compositions according to the invention comprise a pine oil constituent. Pine oil is a complex blend of oils, alcohols, acids, esters, aldehydes and other organic compounds. These include terpenes which include a large number of related alcohols or ketones. Some important constituents include terpineol, which is one of three isomeric alcohols having the basic molecular formula C.sub.10 H.sub.17 OH. One type of pine oil, synthetic pine oil, will generally have a specific gravity, at 15.5.degree. C. of about 0.9300, which is lower than the two other grades of pine oil, namely steam distilled and sulfate pine oils, and will generally contain a higher content of turpentine alcohols. Other important compounds include alpha- and beta-pinene (turpentine), abietic acid (rosin), and other isoprene derivatives.

DEPR:

Particularly effective pine oils which are presently commercially available include Unipine.RTM. 60 (from Union Camp, which is believed to contain approximately 60% terpene alcohols), Unipine.RTM. S-70 and Unipine.RTM. S-70 (from Union Camp, both are believed to contain approximately 70% terpene alcohols), Unipine.RTM. S and Unipine.RTM. 80 (from Union Camp, both are believed to contain approximately 80% terpene alcohols), Unipine.RTM. 80 (from Union Camp, which is believed to contain approximately 80% terpene alcohols), Unipine.RTM. 85 (from Union Camp, which is believed to contain approximately 85% terpene alcohols), Unipine.RTM. 90 (from Union Camp, which is believed to contain approximately 90% terpene alcohols), as well as Alpha Terpineol 90 (from Union Camp, which is believed to contain approximately 100% terpene alcohols). Further effective pine oils include Glidco.RTM. Pine Oil.TM. 60 (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 60% terpene alcohols), Glidco.RTM. Pine Oil 60 (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 60% terpene alcohols); Glidco.RTM. Pine Oil 140 (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 70% terpene alcohols); Glidco.RTM. Pine Oil 80 (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 80% terpene alcohols) Glidco.RTM. Pine Oil 150 (available

from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 85% terpene alcohols); Glidco.RTM. Terpene SW (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 75% terpene alcohols); as well as Glidco.RTM. Terpeneol 350 (available from Glidco Organics Corp., Jacksonville, Fla., believed to contain approximately 100% terpene alcohols). Other products which can contain up to 100% pure alpha-terpineol, may also be used in the present invention.

DEPR:

The pine oil constituent may be present in the concentrate compositions in amounts of up to about 5% by weight, preferably in amounts of 0.1 and 4% by weight, but most preferably in amount of between 2 and 4% by weight.

DEPR:

It is contemplated that one or more nonionic surfactants which are characterized in exhibiting a cloud point of 20.degree. C. or less may also be used as the sole blooming agent in an aqueous hard surface cleaning and/or disinfecting composition, i.e., absent the pine oil discussed herein.

DEPR:

As a further essential constituent, there is included an effective amount of at least one solubilizing agent effective in enhancing the miscibility of the pine oil constituent in water. Exemplary solubilizing agents include, but are not limited to lower alkyl alcohols, especially C.sub.1 -C.sub.8 alcohols, preferably methanol, ethanol, propanol and isopropanol. Further exemplary solubilizing agents include lower alkyl glycols and lower alkylene glycols, especially those containing from 1 to 8 carbon atoms.

DEPR:

The present inventors have found that the addition of a solubilizing agent provides the benefit of improving the solubility of the pine oil constituent in aqueous concentrate compositions and also provides a clarifying effect upon said compositions, enhancing their appearance to the consumer. Also, the addition of the solubilizing agent provides the further benefit of enhancing the shelf stability of concentrate compositions which is a highly desirable feature particularly for such a consumer oriented product.

DEPR:

The inventors have surprisingly found however, that while the use of a solubilizing agent to improve the solubility of a pine oil constituent in aqueous concentrate composition may be known to the art, the use of a solubilizing agent in conjunction with the surface active agents according to Constituent B, and further in conjunction with an optional but desirable nonionic surface active agents as described above, is not believed to be known. The inventors have also surprisingly found that excellent pine oil type concentrate compositions may be formed from these constituents, especially those including amounts of the further optional nonionic surface active agents, which feature identifying characteristics typical of pine oil type cleaning compositions, particularly a pronounced "blooming" effect when a cleaning composition is formed therefrom. Yet, these features are achieved with concentrate compositions which include substantially reduced amounts of pine oil, as well as include substantially reduced amounts of other VOCs as compared to known art compositions. While the use of further optional nonionic surface active agents is not essential for the "blooming" effect to occur, their incorporation is nonetheless frequently desirable for its added detergent and solubilizing effects.

DEPR:

Compositions of the invention may optionally include one or more conventional additives known to be useful in pine oil type cleaning compositions including germicidal agents, viscosity modification agents, fragrances (natural or synthetically produced), foaming agents, water softening agents, further surfactants including anionic, cationic, nonionic, amphoteric and zwitterionic surface active agents, especially those useful in providing further detergent effects, and coloring agents. Such optional constituents should be selected so to have little or no detrimental effect upon the blooming behaviour provided by the inventive compositions, and generally the total weight of such further conventional additives may comprise up to 20% by weight of a concentrated composition formulation, but are preferably less.

DEPR:

A further optional, but desirable constituent include fragrances, natural or synthetically produced containing synthetic fragrance compositions which are intended to mimic the scent of of one or more resins or oils derived from coniferous species of trees, viz., a scent characteristic of pine oil type cleaning concentrates. Such fragrances may be added in any conventional manner, admixing to a concentrate composition or blending with other constituents used to form a concentrate composition, in amounts which are found to be useful to enhance or impart the desired scent characteristic to the concentrate composition, and/or to cleaning compositions formed therefrom. Fragrance effects atypical of pine oil type cleaning concentrates may be used as well.

DEPR:

Further optional, but advantageously included constituents are one or more coloring agents which find use in modifying the appearance of the concentrate compositions and enhance their appearance from the perspective of a consumer or other end user. Known coloring agents, may be incorporated in the compositions in effective amount to improve or impart to concentrate compositions an appearance characteristic of a pine oil type concentrate composition, such as a color ranging from colorless to a deep amber, deep amber yellow or deep amber reddish color. Such a coloring agent or coloring agents may be added in any useful amount in a conventional fashion, i.e., admixing to a concentrate composition or blending with other constituents used to form a concentrate composition. However, other colors atypical of pine oil type cleaning concentrates may be used as well.

DEPR:

One or more such betaine compounds may be added to the compositions of the invention in order to improve the deterative properties of the pine oil hard surface cleaning compositions provided within.

DEPR:

Further exemplary anionic surface active agents which may be used include fatty acid salts, including salts of oleic, ricinoleic, palmitic, and stearic acids; copra oils or hydrogenated copra oil acid, and acyl lactylates whose acyl radical contains 8 to 20 carbon atoms.

DEPR:

Into a suitably sized vessel, the following constituents were added in the sequence: water, pine oil, nonionic surfactant (cloud point 20.degree. C.), solubilizing agent, and BTC-8358.RTM., a quarternary ammonium compound preparation. All of the constituents were supplied at room temperature (approximately 20.degree. C.), mixing of the constituents was achieved by the use of a magnetic stirrer. Stirring, which generally lasted from approximately 2 minutes to approximately 5 minutes continued and was maintained while the particular formulation attained uniform color and uniform clarity or translucency. Each of the formulations exhibited the following physical characteristics: transparent appearance, light to medium yellowish amber color, and an appreciable pine oil odor. The exemplary compositions were readily pourable, and retained well mixed characteristics, demonstrating excellent shelf stability.

DEPR:

As can be observed from the results on Table 2, formulation C1 required a relatively large amount of isopropyl alcohol in order to clarify its composition. Formulation C2 required a substantially smaller amount of additional is isopropyl alcohol in order to clarify its composition, however as the results of Table 4 attest, it exhibited little or no blooming behavior. Surprisingly, the formulation E1 provided the benefit of substantially reduced volatile organic content, viz., isopropyl alcohol and pine oil, but at the same time provides many of the benefits expected of typical pine oil type cleaning concentrate, i.e., good blooming characteristics. As Table 2 illustrates E1 provided blooming characteristics greatly superior to those of C1 at 20.degree. C. and substantially similar to those of C1 at 40.degree. C. In this manner, excellent pine oil type concentrate compositions are provided which have significantly lowered amounts of VOC and yet which provide effective detergency and good blooming characteristics. Other formulations which feature such a characteristic synergy between the respective constituents may also be similarly produced.

DEPR:

Into a suitably sized vessel, the following constituents were added in the sequence: water, pine oil, nonionic surfactant (cloud point <20.degree. C.), solubilizing agent, and any remaining constituents. All of the constituents were supplied at room temperature (approximately 20.degree. C.), mixing of the constituents was achieved by the use of a magnetic stirrer. Stirring, which generally lasted from approximately 2 minutes to approximately 5 minutes continued and was maintained while the particular formulation attained uniform color and uniform clarity or translucency. Each of the formulations exhibited the following physical characteristics: transparent appearance, light to medium yellowish amber color, and an appreciable pine oil odor. The exemplary compositions were readily pourable, and retained well mixed characteristics, demonstrating excellent shelf stability.

DEPR:

With reference to Table 3, formulations designated as "E2" is an illustrative formulation which contains no quaternary ammonium compound but which exhibited the desirable blooming behaviour characteristic of the invention and of pine oil type cleaners. The formulation "E3" is a further illustrative formulations which also did not contain a quaternary ammonium compound but which contained a further surfactant compound, an amphoteric betaine compound. Each of these formulations appeared to be translucent and varying little in color.

DEPR:

As can be observed from the results on Table 4, each of formulations E2 and E3 provided excellent blooming characteristics at both 20.degree. C. and 40.degree. C., substantially superior than the comparative examples according to formulations C1 and C2 described above. The formulations according to E2 and E3 demonstrate excellent pine oil type concentrate compositions are provided which have significantly lowered amounts of VOC and yet which provide effective detergency and good blooming characteristics, and which do not necessarily contain quaternary ammonium compounds as a germicidal active agent. Other formulations which feature such a characteristic synergy between the respective constituents may also be similarly produced.

DEPR:

A further formulation according to the invention was produced in which no pine oil was present, but in which the sole blooming agent was the nonionic surfactant having a cloud point less than 20.degree. C., and is illustrated on Table 5 following:

DEPR:

Although the formulation on Table 5 did not include any pine oil, significant blooming was observed when diluted into a greater volume of water at room temperature at a ratio of formulation:water of 1:64. No pine oil was present in the composition.

DETL:

TABLE 1 FORMULATIONS Formulation: C1 C2 E1

| | | Constituent: Pine Oil | | 60 | | 8 | | 4 | | 4 | | Neodol | |
|--------|-----|-----------------------|-----------------|--------|--------|-------|---|---|----------|------|------|--------|--------------------|
| 91-2.5 | -- | -- | 4 | Neodol | 23-6.5 | 4 | 4 | 4 | BTC-8358 | 1.87 | 1.87 | 1.87 | isopropanol (100%) |
| 23.8 | 6.8 | 9.6 | deionized water | 62.32 | 83.32 | 76.52 | | | | | | | |

Pine Oil 60 is a pine oil preparation available from the Glidco Organics Corp., Jacksonville, FL BTC8358 is an alkyl benzyl dimethyl ammonium chloride (80% active) available from Stepan Chemical Co. Neodol .RTM. 912.5 is a nonionic surfactant composition based on linear alcohol ethoxylates featuring a cloud point <20.degree. C. available from Shell Chemical Co., Houston TX. Neodol .RTM. 236.5 is nonionic surfactant composition based on linear alcohol ethoxylates featuring a cloud point >20 C. available from Shell Chemical Co., Houston TX.

DETL:

TABLE 3 FORMULATIONS Formulation: E2 E3

| | | Constituent: Pine Oil | | 60 | | 4 | | 4.1 | | Neodol | |
|-------|--------|-----------------------|-------------|--------------|--------|-----|-----------------|----------|-------|--------|--------------------|
| .RTM. | 91-2.5 | 4.1 | 4.1 | Neodol .RTM. | 23-6.5 | 9.0 | 6.3 | BTC-8358 | -- | -- | isopropanol (100%) |
| 15.0 | 15.0 | 15.0 | Mackam .TM. | DZ | -- | 5.2 | deionized water | 62.32 | 83.32 | | |

Pine Oil 60 is a pine oil preparation available from the Glidco Organics Corp., Jacksonville, FL BTC8358 is an alkyl benzyl dimethyl ammonium chloride (80% active) available from Stepan Chemical Co.

Neodol .RTM. 912.5 is a nonionic surfactant composition based on linear alcohol ethoxylates featuring a cloud point <20.degree. C. available from Shell Chemical Co., Houston TX. Neodol .RTM. 236.5 is nonionic surfactant composition based on linear alcohol ethoxylates featuring a cloud point >20.degree. C. available from Shell Chemical Co., Houston TX. Mackam .TM. DZ is a surfactant compositions containing cocoamidopropyl betaine

CLPR:

1. A liquid pine oil hard surface cleaning composition comprising per 100% wt.:

CLPR:

2. The liquid pine oil hard surface cleaning composition according to claim 1 wherein:

CLPR:

3. The liquid pine oil hard surface cleaning composition according to claim 1 which further comprises a nonessential constituent selected from: germicidal agents, viscosity modification agents, fragrances, foaming agents, deterative agents, co-surfactants, and coloring agents.

CLPR:

4. The liquid pine oil hard surface cleaning composition according to claim 3 wherein: the one or more optional additives comprise from 0-20% by weight based on the on the total weight of the cleaning composition.

CLPR:

5. The liquid pine oil hard surface cleaning composition according to claim 3 wherein the composition comprises a germically effective amount of a quarternary ammonium compound according to the formula: ##STR4## wherein; at least one of R.sub.1, R.sub.2, R.sub.3 and R.sub.4 is selected from hydrophobic, aliphatic, aryl aliphatic or aliphatic aryl radical of from 6 to 26 carbon atoms, and any remaining R.sub.1, R.sub.2, R.sub.3 and R.sub.4 are hydrocarbons of from 1 to 12 carbon atoms, wherein any of R.sub.1, R.sub.2, R.sub.3 and R.sub.4 may be linear or branched and may include one or more ester or amide linkages; and, X is a salt-forming anionic radical.

CLPR:

6. The liquid pine oil hard surface cleaning composition according to claim 5 wherein the composition comprises a quarternary ammonium compound according to the formula: ##STR5## wherein R.sub.2 and R.sub.3 are the same or different C.sub.8-C.sub.12 alkyl, or R.sub.2 is C.sub.12-16 alkyl and R.sub.3 is benzyl, and the X is a halide or methosulfate.

CLPR:

7. The liquid pine oil hard surface cleaning composition according to 3 wherein the composition comprises a germicidally effective amount of a quarternary ammonium compound selected from cetyl trimethyl ammonium bromide, alkyl aryl ammonium halides, N-alkyl pyridinium halides, octyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride, N-(laurylcocoaminoformylmethyl)-pyridinium chloride, and quarternary ammonium compounds which includes a hydrophobic radical which includes a substituted aromatic nucleus.

CLPR:

8. A liquid pine oil cleaning composition according to claim 1 consisting essentially of:

CLPR:

10. An aqueous cleaning composition according to claim I comprising the liquid pine oil cleaning composition according to claim 1 dispersed in water in a weight ratio of composition to water of from 1:0.01 to 1:1000.

CLPV:

A) 0.1-4% wt. of a pine oil preparation containing at least approximately 60% wt. alpha-terpineol;

CLPV:

A) 0.1-4% wt. of a pine oil preparation containing at least approximately 60% wt. alpha-terpineol;

CLPV:

A) 0.1-4% wt. of a pine oil preparation containing at least approximately 60% wt. alpha-terpineol;